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ALICE T0 detector Alignment and Calibration status

Outline

- T0 detector
  - DBs
- Alignment
  - Status
  - Outlook
- Calibration
  - Status
  - T0 preprocessor
  - Outlook

T0 detector in ALICE

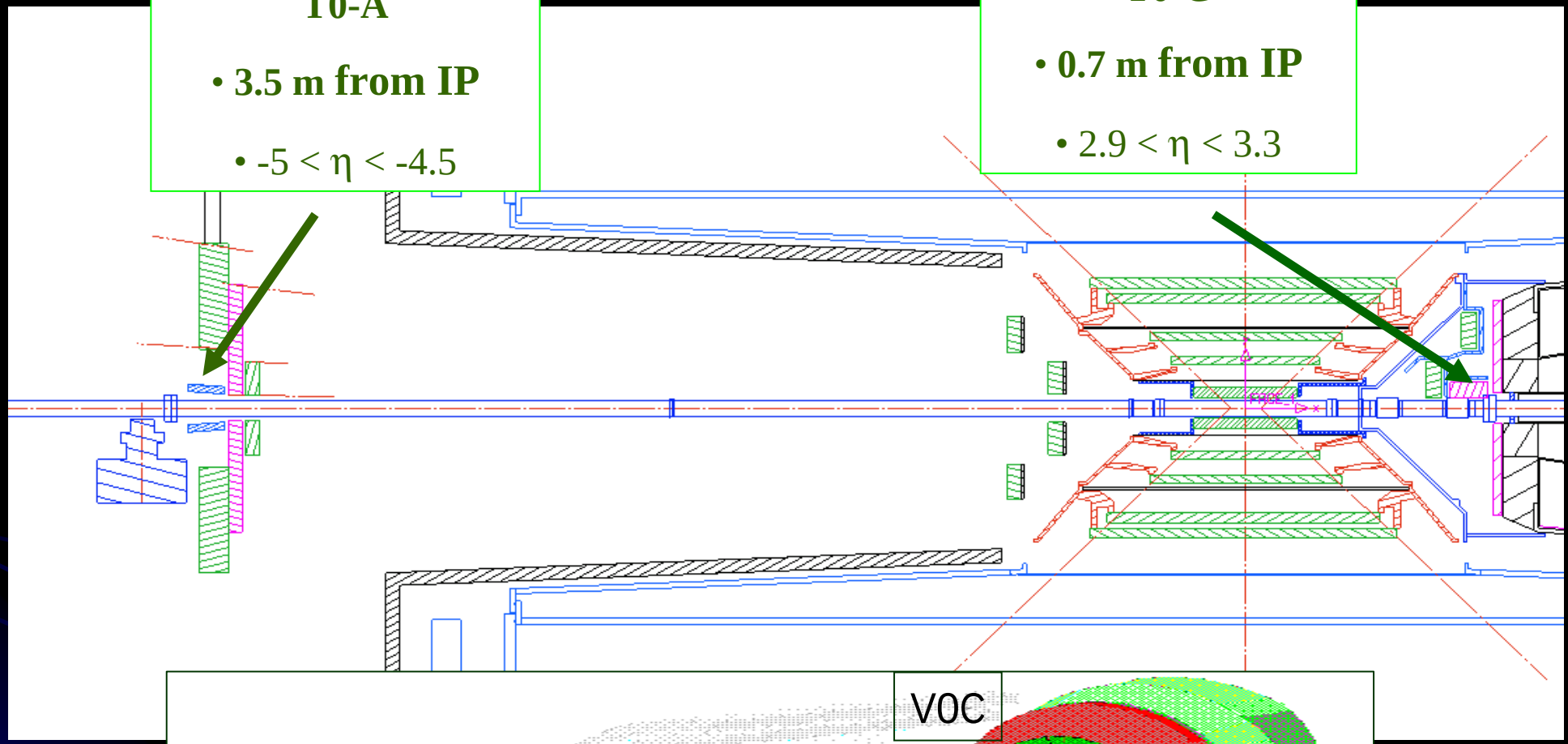
Tomasz Malkiewicz

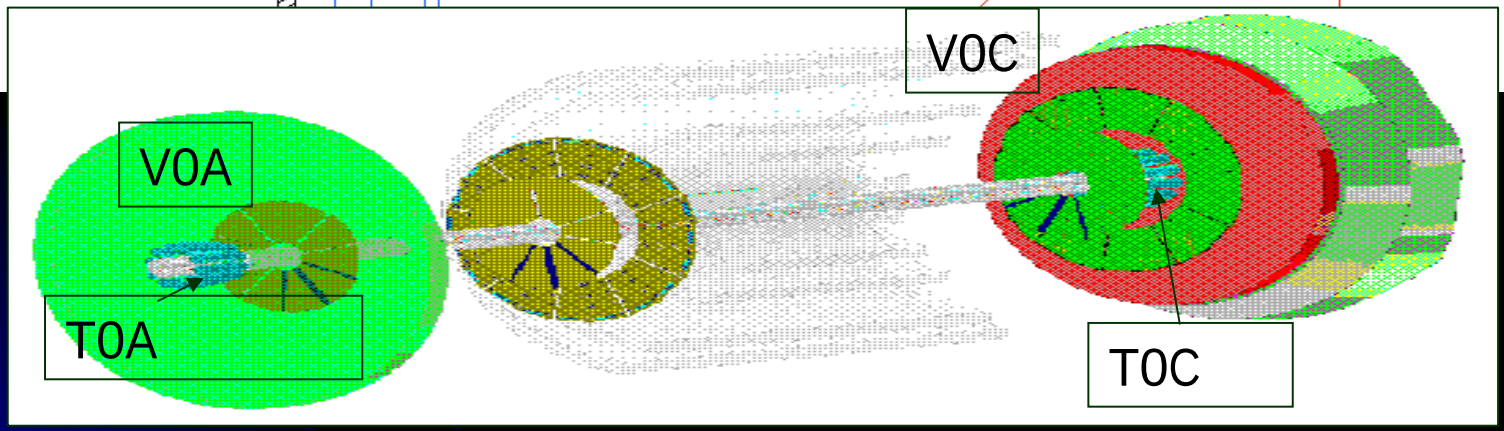
T0-A

- **3.5 m from IP**
- $-5 < \eta < -4.5$

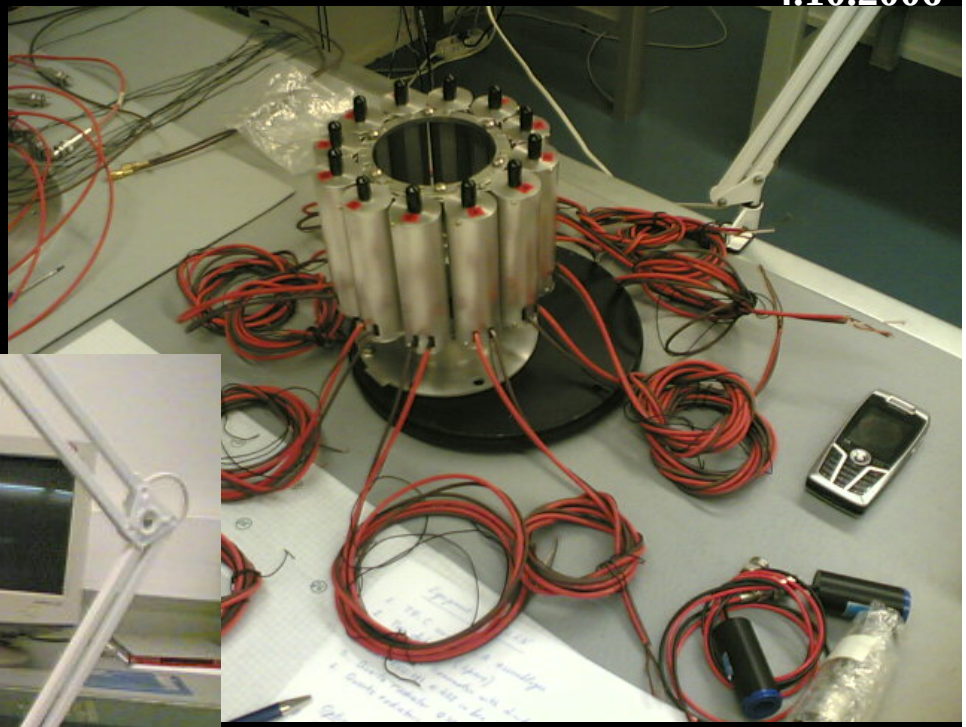
T0-C

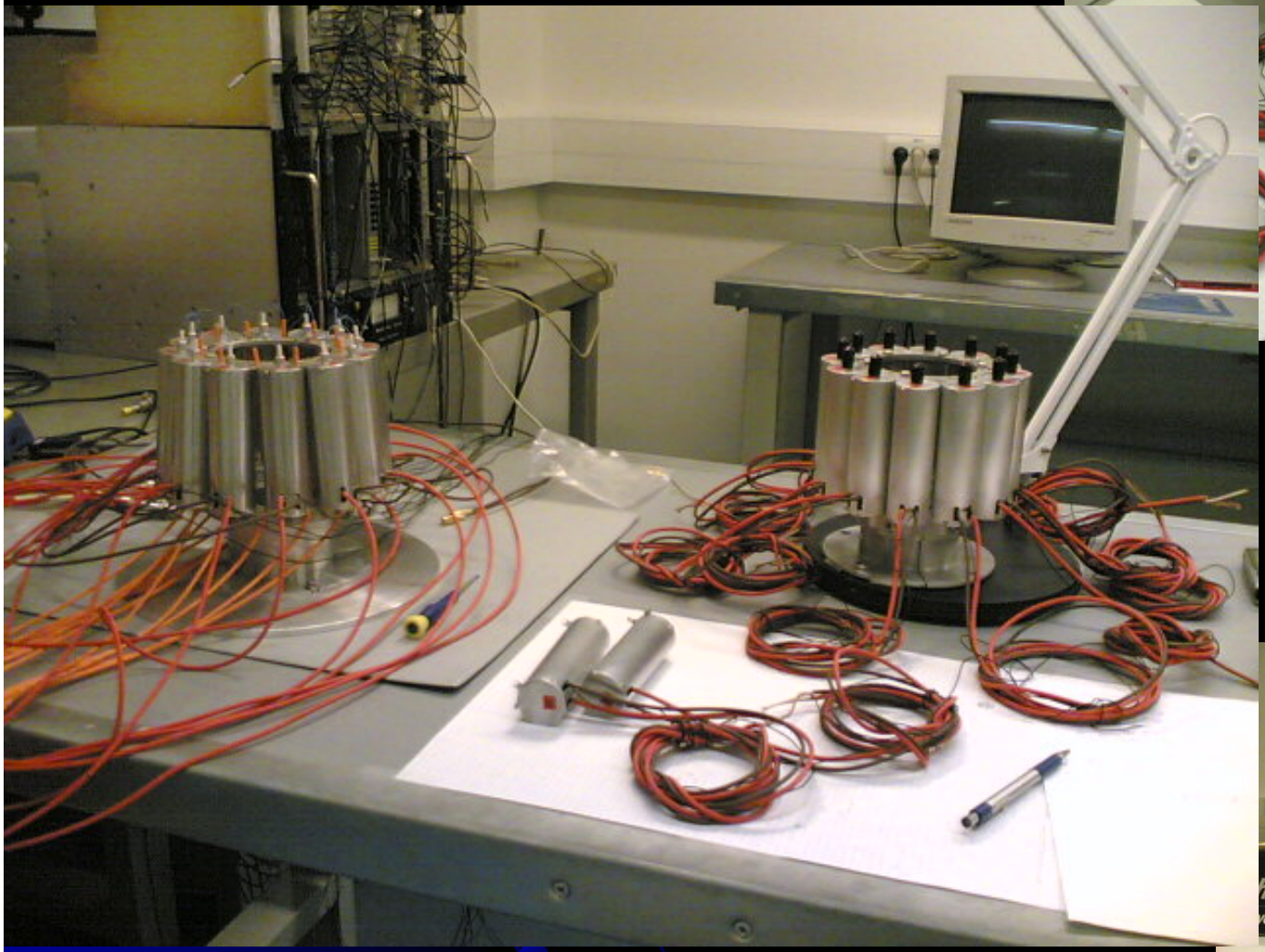
- **0.7 m from IP**
- $2.9 < \eta < 3.3$





T0-A assembled 21.09.2006





T0 detector milestones

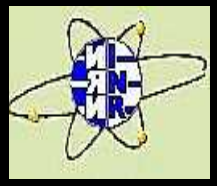
T0-A commissioning (beam run at CERN)	October 2006
T0-C installation	January 2007
Electronics production completed	February 2007
T0-A installation	June 2007 ?

ALICE DBs

- DCS:
  - Application scope: configuration of systems and devices (modules and channels), front-end configuration (busses, thresholds); Archiving of monitored detectors and devices parameters
  - Size: millions of records, Tera bytes
- HLT:
  - Application scope: mini-DST like TAG/ESD database for physics studies and offline event selection
  - Size: up to 10^9 events and 30TB per year
- DCDB:
  - Application scope: use by individual sub-detector groups and integration, repository and flow management for modules, components and their test data, cables, racks
  - Size: millions of records, Tera bytes
- ECS:
  - Application scope: inclusion/exclusion of sub-detectors to a partition
  - Size: small number of small records
- DAQ:
  - Application scope: parameter repository and resources assignment to DAQ tasks: configurations (current and stored), run parameters (current and stored)
  - Size: possibly large number of small records
- Trigger:
  - Application scope: repository for trigger classes (input to CTP), definition of trigger masks
  - Size: large number of small records
- Alignment and Calibration Database

Manpower

Alla Maevskaya



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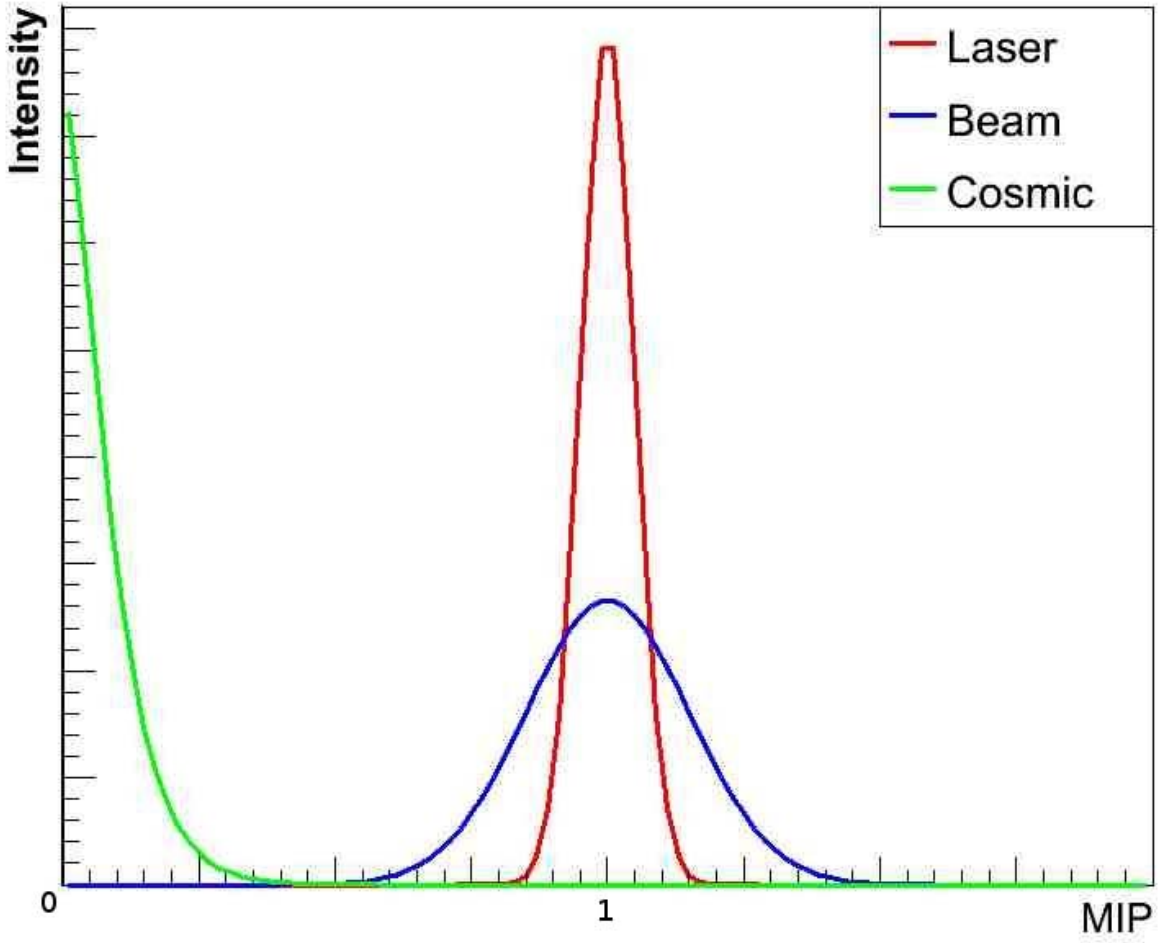
T0 signal



T0 signal w.r.t. ?

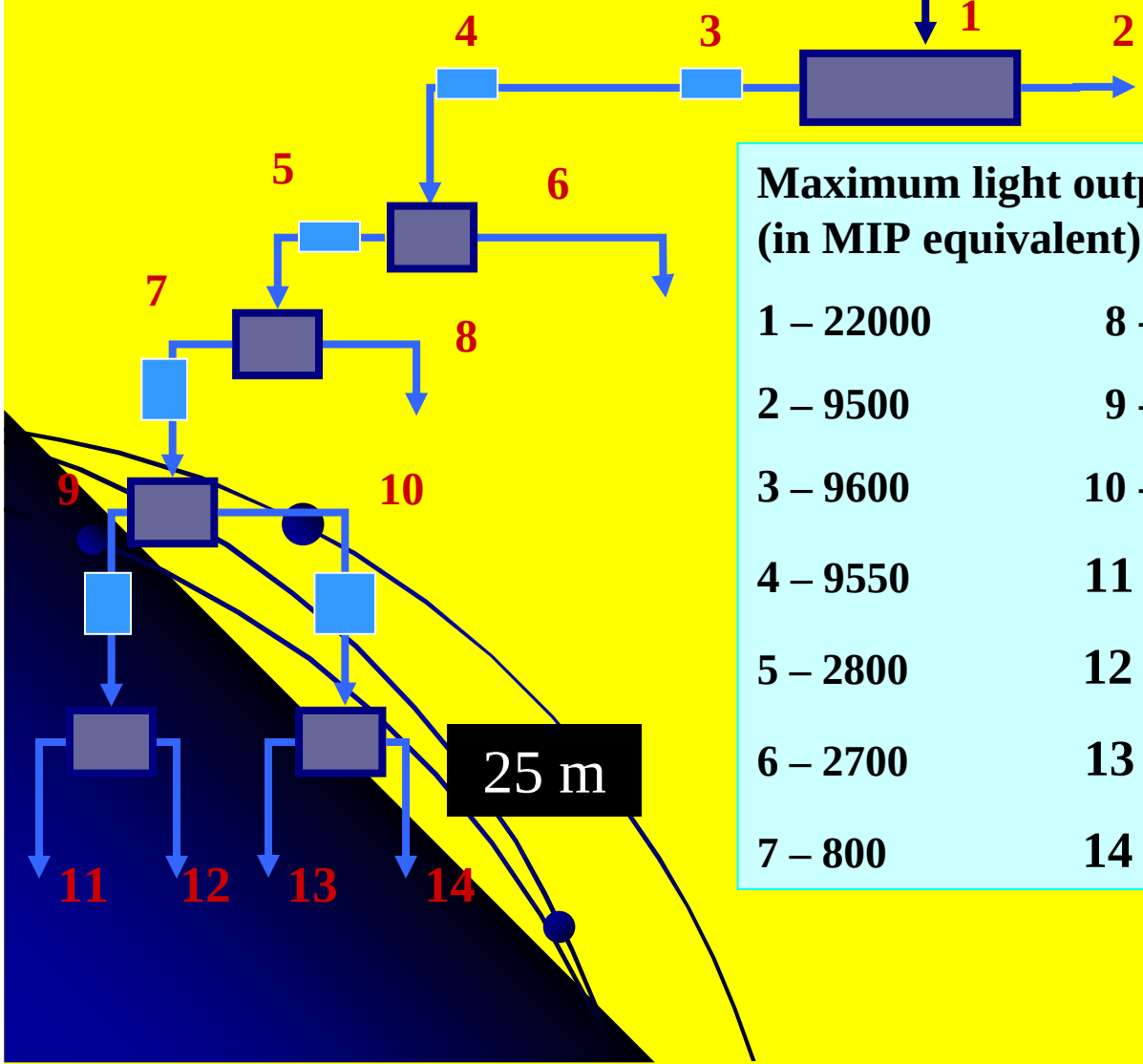
- Triggers:
  - BC 25 ns
  - L0 ~ 1.2 μs
  - L1 ~ 5 μs

T0 Laser Calibration System

Picosecond Injection Laser PIL040G, 408 nm

SM patchcord

Variable Attenuator 48AT-0-FC-0-A11-01



Maximum light output (in MIP equivalent):

1 – 22000	8 - 900
2 – 9500	9 - 240
3 – 9600	10 - 220
4 – 9550	11 - 67
5 – 2800	12 - 66
6 – 2700	13 - 90
7 – 800	14 - 75

Optical Splitter FOBS-12P-111-50/125-MMM-405-50/50

Fused Splitter FOBS-12-333-SSS-400-50/50

FC/PC Adaptors AD31ZP4N

SM patchcord

MM patchcord

T0 alignment status

- Optical survey – decision in Oct. 2006
  - T0-A and T0-C: fiducial marks

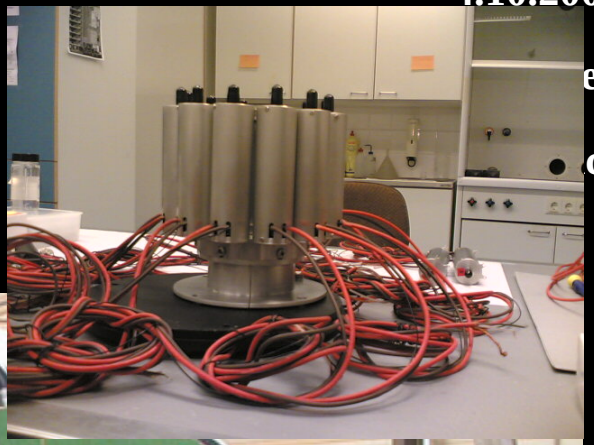
- Residual misalignments
  - **max shift in cm w.r.t. Global RS:**

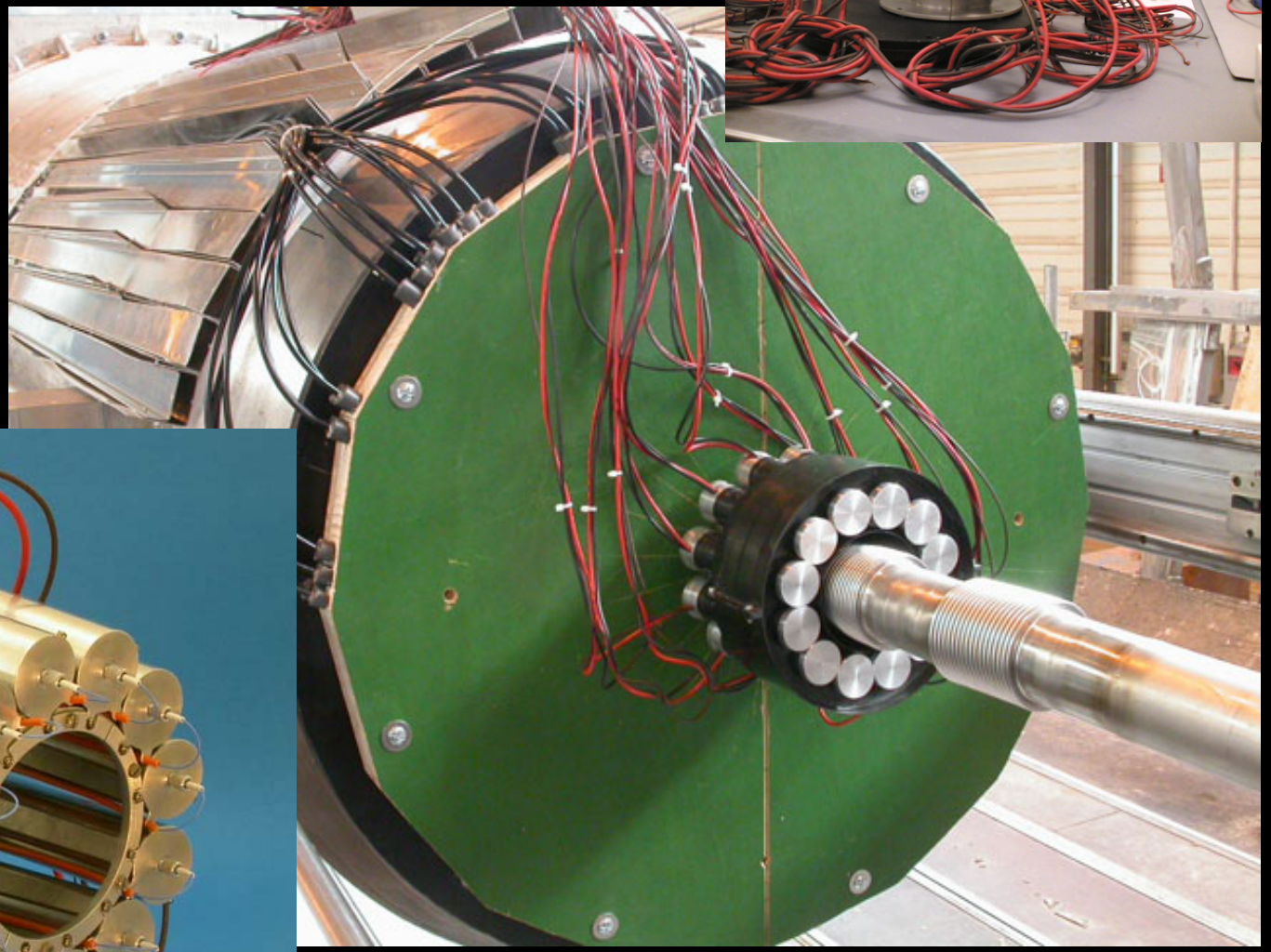
    Double_t sigmatr = 0.05
  - **max rot in degrees w.r.t. Global RS:**

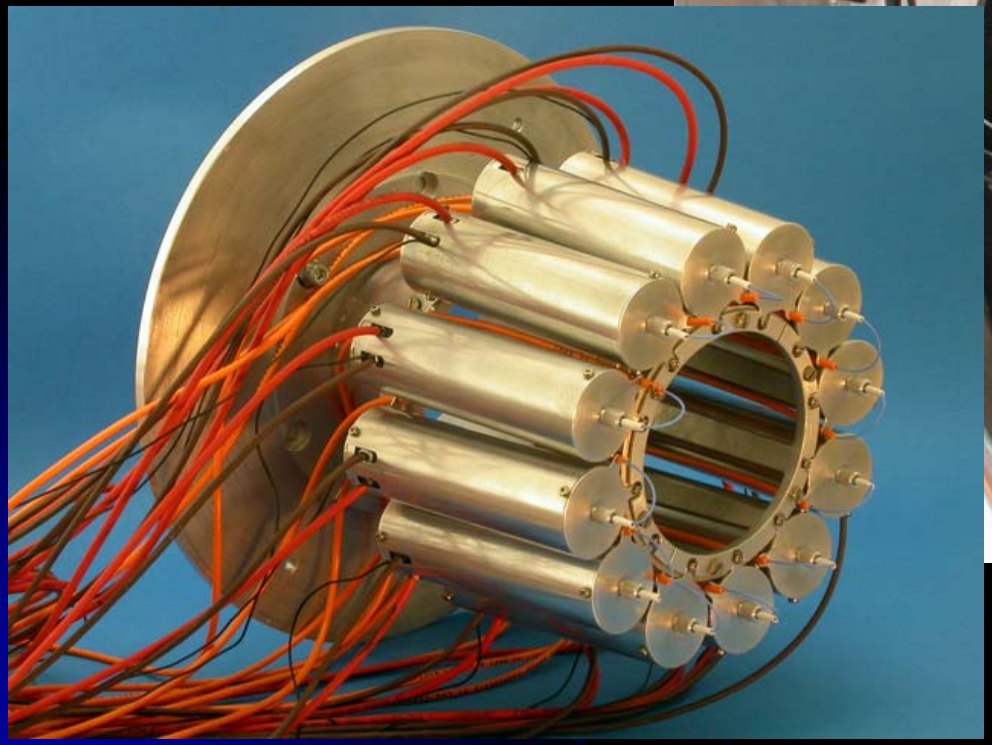
    Double_t sigmarot = 0.3

Laser Survey

- survey during installation
- reference
  - global RS
  - C-side -> muon
  - A-side ?







T0 outlook
Alignment

- Laser Survey

- Provide symbolic volume names
- AddAlignableVolumes

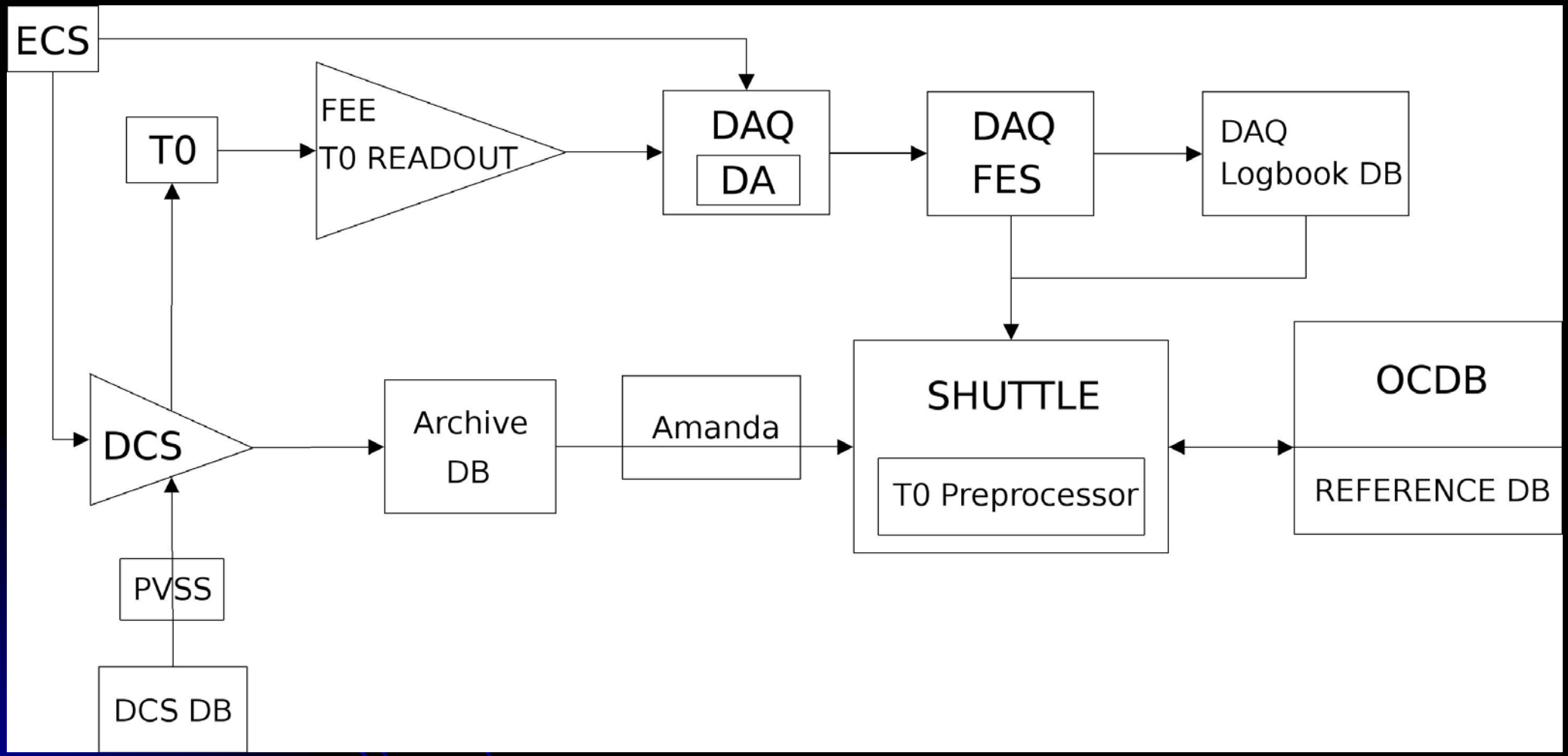
Calibration DB – current status

T0 Calibration procedure

Calibration class (AliSTARTCalibData)
adding new methods:
SetTime(Float_t *signal, Float_t *delay)

T0 Preprocessor class

Calibration procedure



T0 Preprocessor

AliSTARTPreprocessor

UInt_t AliSTARTPreprocessor::Process(TMap* dcsAliasMap)

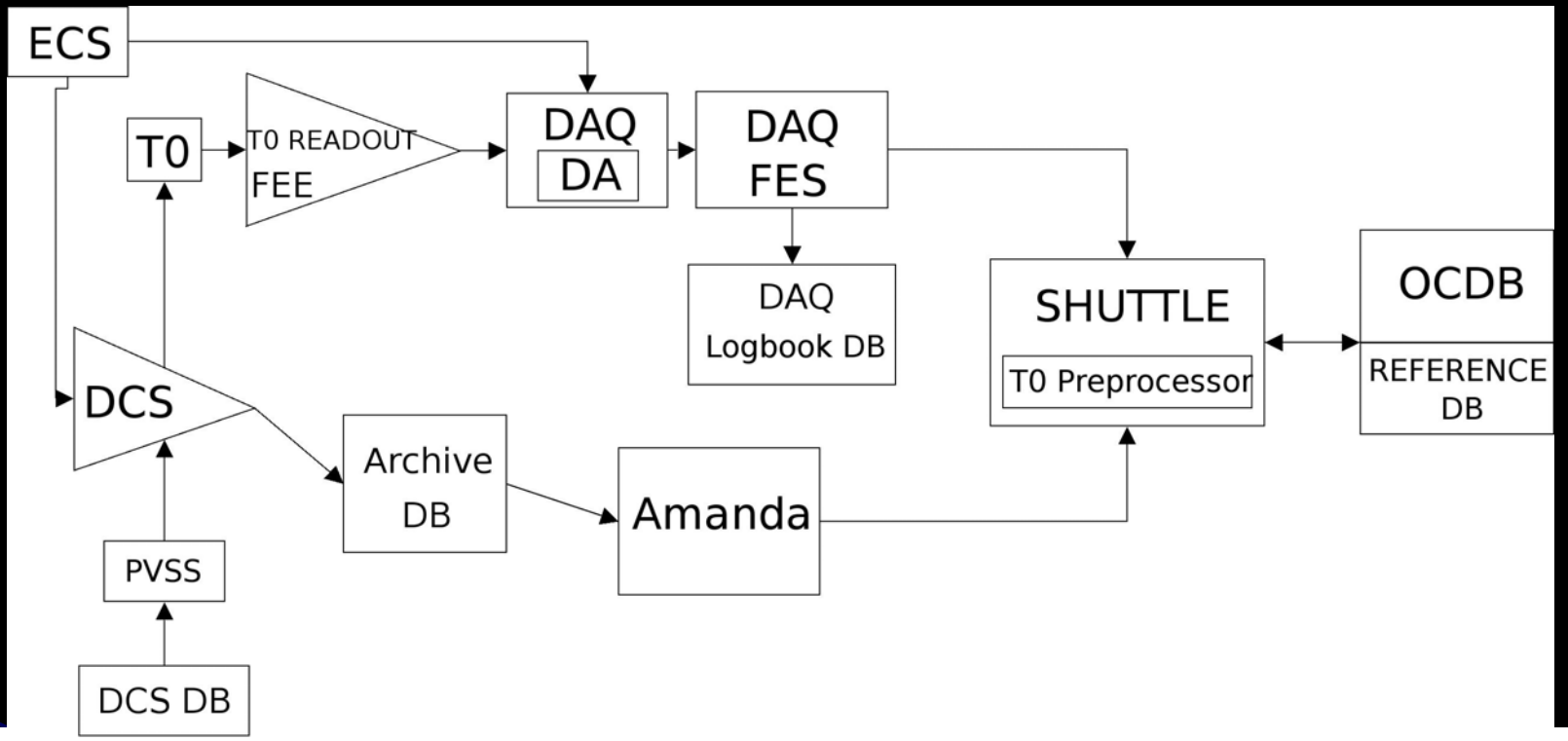
```
//DCS
TString aliasName =Form("T0HV%d", j);
aliasArr = dynamic_cast<TObjArray*> (dcsAliasMap->GetValue(aliasName.Data()));

//DAQ
const char* TimefileName = GetFile(kDAQ, "TIME", "LDC0");

//Calculate time
calibdata->SetTime(numbers, hv_time);

// Put time to OCDB
UInt_t result = Store("Calib","Data", calibdata, &metaData);
```

AliSTARTCalibData

```
void  SetTime(Float_t* time, Float_t* delay);
void  SetTime(Int_t channel, Float_t val)
void  SetAmplitude(Int_t channel, Float_t val)
```

T0 outlook

Calibration



- AliSTARTPreprocessor
- AliSTARTCalibData
- Use case (1 and 4 ?) to be confirmed

Thank you for your attention!